4699

4699

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. .... Office No. 4699

LOCALITY

State Puerto Rico

General locality Vicinity of

Locality Santa Isabel and Berberia Island

1927

CHIEF OF PARTY

O. C. Mattison

LIBRARY & ARCHIVES

DATE ....

4699

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: Porto Rico

11—5813

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 4699

LOCALITY:

South Coast of Porto Rico
Vic of Santa Isabel and Berberia I.

1927

CHIEF OF PARTY:

G.C.Mattison

4699

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 9

Instructions dated July 3, 1926; February 28, 1927.

LIMITS:

The sheet comprises the area between North Latitude 17° 53' and 18° 01', and West Longitude 66° 22' and 66° 33'. The water area is bounded by Jauca Island on the east, Frio Island on the west, and on the north and south by the coast of Porto Rico and Muertos Island respectively.

GENERAL DESCRIPTION OF COAST:

The coast in the vicinity of Sta. Isabela is low and flat, fringed at the shore line with scattered clumps of trees and bushes. The mountain range lies several miles inland and the peaks are not well defined, making it very hard to pick out ranges for the navigator unfamiliar with the coast. The point from ⊙ "Jane" to "Cayito" is covered with a thick growth of trees and a coconut grove and Point Petrona is covered with mangrove growth. With these two exceptions the shore is more or less open from the sea.

SURVEY METHODS:

Due to poor living conditions and lack of supplies at Sta. Isabela, the hydrographic party was based at Ponce. Party consisted of motor drag launch Marindin and tender M4; Lieut. Benjamin H. Rigg, in charge. Engineers: C. P. Morrill and P. Smith; left angle, H.V.Rackliffe; recorder, C. Jackson; coxswain, L. Olive; leadsman, F. Bravo, Sea. A.B. A Ford truck was furnished party to use for running to and from work and in doing shore work.

Signals built by the previous party for topography and triangulation were found to be missing in many cases. The natives are to blame for they steal the wood and cloth as soon as the survey party has left the locality. Several mornings and afternoons were spent in signal building.

The following signals were used in the survey:

Triangulation:

Frio 2	River	Jack
Cayito	Jauca 2	Berberia 2
North 2	Muertos I. Lt. Ho.	Fortuna B
Fortuna S	Green	Amelia
Tank	Warehouse	Mangrove
Boca Chica B	Boca Chica S	Cortada B
Cortada S	Windmill	Petrona
	High	

Topographic:

North gable warehouse at Hacienda, Santa Isabel (North)
Steel Stack at Jobitos Pump Station (Flor)

Windmill 7	Windmill 6	Windmill 1
South Gable Warehouse at Hacienda Potala		
Bol (tree)	Rock (W. rock)	Bow (rock)
Don	Mid	End
Last	Lone	Dam
Jane	Bell	Top
Tar	Not	Tab
Row	Ban	Rat
How	Dan	Rat

Hydrographic:
(located by Hydrographic Party)

Tree(tall tree on Berberia Island) Lat. 17°56'6lmeters; Long. 66°27' 865 meters.

A portable automatic tide gauge was established at Ponce Playa on the municipal dock. Another staff and gauge was installed at the end of the concrete dock belonging to the Sta. Isabela sugar central at Sta. Isabela roadstead. Levels were run at both places connecting the tide staffs with U.S.C.& G.S. standard bench marks previously installed by R.C.Rowse.

The concrete dock at Sta. Isabela is used by the Central to load sugar into lighters for transfer to steamers. Freight cars are run out on the dock and the bags chuted into the waiting lighters. The dimensions of the dock were taken by steel tape and soundings were made with a lead line at intervals of ten feet all around the dock. Only 5' of water was found along the sides and 6' at the end. A row of rotten piles from a previous wooden dock are standing at the end of the concrete structure. This makes landing impossible across the end of the dock. The weather is so bad and protection so poor that the lighters used at this place are returned to Ponce after each loading. The measurment and soundings taken are recorded in Volume 1, page 62 of the sounding records.

All but the inshore sounding was done with the Marindin. All soundings were taken with the hand lead.

The inshore work and detached soundings were done using the tender.

Referring to Paragraph 4, INSTRUCTIONS dated July 3, 1926, all red lines marked on the bromides were run and such additional lines as were necessary to give a close development of the area were also run.

Spots that showed probable indications of a shoal were examined for least depths. Shoals surveyed where in critical places were drifted over on calm days and least depths ascertained and located by detached soundings.

Records from the tide gauge at the Sta. Isabela dock were used in reducing the soundings.

All buoys were located by sextant fixes and recorded in the sounding records. They are recorded as follows: Volume 5, Red Nun #2, Red Nun #4, Black Can #1, Black Can #3; Volume 7, Black Mooring buoy, Sta. Isabela Roadstead, Red Nun #6

The work done in previous surveys was transferred to the boat sheet and a careful comparison was made between old and new work. All work checked within the allowable limits. The following shoal spots were examined and least depths obtained as tabulated:

Between Jauca and Berberia, running NE and SW, a least depth of 29½ feet was obtained. Located in Latitude 17°54'414 meters, Longitude 66°25'1425 meters. Jauca lies three miles away and bears 62½° true.

On the same shoal a least depth of 26½ feet was found in Latitude 17°54'422 meters, Longitude 66°25'1240 meters. From this spot Jauca bears 64° 40' true and lies 2.6 miles distant.

On the same shoal a least depth of 23½ feet, in Latitude 17°54' 1353 meters, Longitude 66°25' 808 meters. Jauca bears 74° 30' true and lies 2.2 miles distant.

78 meters southwest of the range used by the B-I SS Line, a least depth of 21½ feet was found. Jauca bears 79° true and lies 1.7 miles away.

50 meters northeast of this same range, a least depth was found of 17¾ feet, in Latitude 17°55' 533 meters, Longitude 66° 25' 178 meters. Jauca bears 87° 30' true and lies 1.8 miles distant.

On range used by the B-I SS Line, a least depth of 20 feet, in Latitude 17° 55' 460 meters, Longitude 66° 25' 196 meters. Jauca bears 86° 30' true and lies 1.8 miles distant.

A shoal with a least depth of 14 feet was found in Latitude 17° 55' 860 meters, Longitude 66° 24' 904 meters. Jauca bears 95° 20' true, and lies 1.2 miles away.

A small detached shoal with a least depth of 19' lies in Latitude 17° 55' 1390 meters, Longitude 66° 25' 650 meters. A red brick stack at Sta. Isabela Central (Signal Green) bears 348° and lies 3.8 miles away.

A shoal near the anchorage has a least depth of 20 feet, and lies in Latitude 17° 57' 754 meters, Longitude 66° 26' 1460 meters. Signal Green bears 15° true and lies 2.1 miles away.

On a range of two brick stacks at Sta. Isabela Central Landing is a shoal with least depth of 19 feet. It lies in Latitude 17° 57' 910 meters, Longitude 66° 27' 733 meters. Signal Green bears 29° 20' true and lies 2.2 miles away.

In the anchorage area a shoal was found with 17½ feet of water, lying in Latitude 17° 57' 1160 meters, Longitude 66° 27' 1323 meters. Sugar Central Warehouse bears 41° true and is 1.6 miles away.

In the same area is a shoal with 17 feet of water. It is in Latitude 17° 57' 1446 meters, Longitude 66° 27' 1010 meters. Sugar Central Warehouse bears 38° true and is 1.4 miles away.

A shoal with a least depth of 18½ feet lies in Latitude 17° 57' 943 meters, Longitude 66° 28' 1630 meters. Sugar Central Warehouse bears 58° 08' true and is 2.5 miles away.

A shoal with a least depth of 19½ feet lies in Latitude 17° 57' 1438 meters, Longitude 66° 29' 337 meters. Sugar Central Warehouse bears 66° 52' true and is 2.7 miles distant.

A shoal with a least depth of 17 feet lies in Latitude 17° 57' 334 meters, Longitude 66° 29' 977 meters. Sugar Central Warehouse bears 58° 34' true and is 3.2 miles distant.

A shoal with a least depth of 23 feet lies in Latitude 17° 57'

1038 meters, Longitude 66° 29' 1357 meters. Boca Chica brick stack bears 309° 25' true and is 2.5 miles distant.

A shoal with a least depth of 26 feet lies in Latitude 17°57' 584 meters Longitude 66° 30' 50 meters. Boca Chica brick stack bears 318° true and is 2.5 miles distant.

A shoal with a least depth of 24 feet lies in Latitude 17° 57' 260 meters, Longitude 66° 30' 227 meters. Boca Chica brick stack bears 322° 25' and is 2.6 miles distant.

A shoal with a least depth of 35' lies in Latitude 17° 57' 392 meters, Longitude 66° 31' 673 meters. Boca Chica brick stack bears 350° 30' true and is 2.0 miles distant.

A shoal with a least depth of 22½' lies in Latitude 17° 56' 1828 meters Longitude 66°31' 1492 meters. Boca Chica brick stack bears 0° true and is 2.2 miles distant.

A shoal with a least depth of 29' lies in Latitude 17°56' 1297 meters, Longitude 66° 32' 142 meters. Boca Chica brick stack bears 7°18' true and is 2.5 miles distant.

A shoal with a least depth of 29 feet lies in Latitude 17° 57' 00 meters Longitude 66°32' 495 meters. Boca chica brick stack bears 12°40' true and is 2.2 miles distant.

This list comprises the principal critical depths found on shoals examined.

A ridge about 300 meters long, running almost east and west, with a least depth of 29', lies in Latitude 17°57' 120 meters, Longitude 66°30' 975 meters. Boca Chica brick stack bears 331° true and is 2.3 miles distant. This spot is shown as 8 fathoms on chart No. 902.

RANGE LINES RUN.

Three ranges were run to be used by ships entering to take sugar. Twenty feet is the least depth found on these ranges. The large yellow brick stack at the Fortuna Sugar Central east of Ponce, on range with a conical shaped mountain peak in the southern end of the island, carries 20 feet. The stack bears 302° true when on range. This I have called No.I. Continue on this range till the red brick stack at Sta Isabela, (called Green on hydrographic sheet) and the yellow brick stack at Sta Isabela are on range. This range carries 19' to the anchorage, The red brick stack spoken of in range two is at an abandoned mill slightly closer to the beach than the present ~~Santa Isabela Central~~. If more than 19' of water is required to the anchorage, continue on range No.I until Green bears 50° true, this range carries 27 feet to the anchorage. A 52° true bearing on Green brings a small conical hill in the first range of foot hills on range with the stack, but the country is so rolling and the hills so similar, only a person thoroughly familar with the country would be able to pick it out without taking a bearing. These were the best ranges found.

The black mooring buoy placed by the central is used by most ships while loading.

CHARACTER OF THE BOTTOM.

There is good holding bottom in the anchorage. Inside the two fathom curve the bottom is muddy and in many places covered with eel grass. In the deeper areas the approach and to the west end of the sheet the bottom is sand and coral. All the shoals examined were coral growths and finding the least depth consisted of feeling around with the lead until the top of the highest coral head was found.

The water in this vicinity seemed to be clouded and I was unable in many places to see the bottom in four fathoms. The sun gave us faint reflections and using this to guide us the coral heads were located.

TIDES AND CURRENTS.

The mean range of tide at Sta. Isabela is 0.6 of a foot. The currents encountered were from the East and never more than ½ knot. These were caused partly by the wind.

WIND.

The prevailing winds are the southeast trades, starting to blow soon after sunrise and freshening until noon. In the late afternoon the breeze drops and swings around to the north generally light airs in the evening. April and May, the time of this survey was marked by sudden heavy showers, many times accompanied by wind squalls. The land back of the coast is much more liable to showers than the water areas in the vicinity. Many times our land signals were obscured by rain while the sounding launch was in the sunshine.

LEAD LINE? PLANE OF REFERENCE ETC.

Soundings are plotted on the sheet in feet. The plane of reference is mean tide level minus 0.5'. Tide guage at Santa Isabela Sugar Dock was used for tidal data. The results of this guage were compared with Ponce.

Plane of reference reading on guage 2.48'
Lowest tide observed, reading on guage I.70' May 4th., I3 o'clock.
Highest " " " " " 3.00' April 8th., 5:20 o'clock.

Bronze center lead line was used on this survey, no lead line corrections were found.

Forwarded
G C Mattison
Cdr. S S Ranger.

Respectfully
Submitted Benjamin H Rigg
J. H. & G. Surg.

STATISTICS SHEET

DATE	LETTER	VOLUME	POSITIONS	SOUNDINGS	MILES STATUATE	VESSEL
April 4	A	1	72	372	8.0	Marindin
" 6	B	1	60	318	8.4	"
" 7	C	1	98	488	13.4	"
" 8	D	1	92	479	13.4	"
" 11	E	1	25 (104)	94	3.0	"
" 11	E	2	83	420	12.7	"
" 13	G	2	65	102	10.0	"
" 14	H	2	101	377	13.7	"
" 18	J	2	66	265	7.8	"
" 19	K	2	20 (108)	77	3.2	"
" 19	K	3	88	256	9.7	"
" 20	L	3	92	231	7.8	"
" 21	M	3	76	284	9.6	"
" 22	N	3	102	411	12.3	"
" 25	P	3	55 (89)	291	10.4	"
" 25	P	4	34	185	5.2	"
" 26	Q	4	70	377	10.3	"
" 27	R	4	88	480	16.1	"
" 28	S	4	77	408	14.7	"
" 29	T	4	34 (77)	192	6.5	"
" 29	T	5	43	200	6.8	"
May 2	U	5	89	450	15.0	"
" 3	V	5	67	298	9.5	"
" 4	W	5	58	243	8.6	"
" 12	X	5	42 (52)	162	6.2	"
" 12	X	6	10	60	3.0	"
" 5	a	7	78	368	11.5	M#4
" 6	b	7	28	200	4.0	"
" 9	c	7	76	702	16.7	"
" 10	d	7	59	277	5.0	"
" 11	e	8	77	405	12.4	"
		5	Locations Red Nun # 2 - # 4			
		5	" Black Can # 1 - # 3			
		7	" Black Mooring Buoy			
		7	" Red Nun # 6			
	52d	8	Detached soundings.			
	59d	8	" "			
	40c	7	" "			
	46c	7	" "			
			2026	9472	2949	

Area square miles- 315 sq.mi.

(11)

Copy for Records Section. February 10, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 4699

Locality: SOUTH COAST OF PORTO RICO.

Chief of Party: G. O. Mattison, 1927.
Plane of reference is M L W.
1.9 ft. on tide staff at Santa Isabel.
1.9 " " " " " Ponce.

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

E Rude

Chief, Division of Tides and Currents.

Section of Field Records

Report on Sheet No. 4699 — Surveyed in 1927
Chief of Party G.C. Mattison — Surveyed by B.H. Rigg
Protracted by C.F. Ehlers — Soundings plotted by B.H. Rigg
Verified and Inked by J.T. Walker

The sounding records are neat and complete except as follows. — The names of the signals are not always at the top of each page when the same signals are used over and over. Some notes in the remarks column referring to distances to buoys indicate that a 10 000 scale was used in measuring or estimating the distances. Between 56 and 57 (green) d in Vol. 7 page 62 is shown a 17.6 foot sounding which cannot be plotted as it lies between isolated soundings. No reference to this very critical sounding could be found in the Des. Report. The matter was taken up with HAT but no reply has come as yet.

Accuracy of Protracting. — Vol. 1. Good. — Vol 2. Right arm of field protractor seems to have been off 3 to 7 minutes - noticeable with signal at end of arm without extension - see pos. 20 (blue) F. Time checks very poorly from 5 to 7 (blue) F. — Vol. 3. Good. — Vol. 4. Time position revised because of incorrect plotting of △Wind. — Vol. 5. Good. — Vol 6. Good. — Vol 7. Good. — Vol. 8. Used wrong signal for 7 consecutive positions.

Plotting of soundings. - Soundings were revised because of careless spacing, incorrect soundings, and omissions. Probably most of them were omissions. Bottom characteristics were omitted on smooth sheet for work in Vol. 1.

The sheet was clean and the work was as legible as could be expected in such congested work.

The drafting conformed to General Instructions.

In Vol. 1 page 63 was found a sketch of the Sta. Isabela Sugar Co. concrete dock. As no time or date was found and as the width of the dock was not shown a letter was written to the field for more details. The reply is included in the Des. Report and the dock is shown on the smooth sheet as a sub sketch.

Triangulation signal Windmill was found to be plotted about 1/4 off and was replotted. Topo signal Lou was about 1/16" off and was also replotted.

Reviewed by

Respectfully submitted
J T Walker
Oct. 25, 1928

11

Attached is the information requested relative to size of wharf and soundings around wharf of Sta. Isabela Sugar Co. P.R.

Date + time of day, locality of cutoff.

From H4699 Vol 1 page 63

Locality

SOUNDINGS

Year 19 — Month — Day of Month

BOTTOM

Soundings in feet [illegible] Tape [illegible] and [illegible]

5 5 6 6

4 4 5

2

1 1 1

Shore line

Sta Is [illegible]

POST-OFFICE ADDRESS: U.S.C. & G.S.S. LYDONIA, Portland, Maine.

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

OCT 22 9 16 AM '28

14

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

Steamer LYDONIA

October 20, 1928.

To: The Director,
U. S. Coast & Geodetic Survey,
Washington, D. C.

From: Commanding Officer,
U.S.C. & G.S.S. LYDONIA.

Subject: Field record.

Reference: Director's letter 10-McC dated Sept. 20, 1928.

The following information has been supplied by Lieutenant Rigg.

The soundings were made about 11:30 A.M. on April 2nd.

The wharf was drawn to scale 12 (3.6 m) feet wide at outer end and 8 (2.4 m) feet at inner.

G. C. Mattison,
Commanding Officer,
U.S.C. & G.S.S LYDONIA.

gcm/s

ADDRESS THE DIRECTOR
U.S. COAST AND GEODETIC SURVEY

AND REFER TO NO. 11-DRM

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
WASHINGTON November 8, 1928.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4699

Vicinity of Santa Isabela, Porto Rico

Surveyed in 1927

Instructions dated July 3, 1926 and Feb. 28, 1927 (RANGER)

Chief of Party, G. C. Mattison.

Surveyed by B. H. Rigg.

Protracted by C. F. Ehlers.

Soundings plotted by B. H. Rigg.

Verified and inked by J. T. Walker.

1. The records conform to the requirements of the General Instructions except for the frequent use of the word "Same" at top of page instead of names of signals.

2. The plan and character of development fulfill the requirements of the General Instructions and satisfy the specific instructions.

3. The sounding line crossings are adequate, and the information is sufficient for drawing the curves when the new work is considered in connection with the previous surveys.

4. The usual field plotting was done by the field party. Forty-six positions were erroneously protracted.

   Triangulation point Wind was plotted 100 meters out of position, resulting in 9 errors in boats' positions.

   The wrong signal was used in plotting 7 consecutive positions. Most of the other errors in protracting appeared to be due to the protractor being out of adjustment.

   There were numerous errors in plotting of soundings due to incorrect time spacing, and in some cases plotting soundings that did not appear in the records.

5. H. 2736 shows 19 feet 2100 meters W.S.W. from Cayito Pt. The new survey has 25 and 27 feet near this spot and 21 1/2 feet to northwestward, but as the development here is not close and an inspection of the records containing the 19-foot sounding contains nothing to discredit it, the 19 should be charted.

6. Except for the rather scanty development on the spot noted in paragraph 5, all the indications of shoals in the areas specified in the instructions have been well covered and no additional leadline surveying is required. The number of shoals of very small extent indicates the possibility of additional shoals that only the wire drag would reveal. Also it would probably show less water on some of the shoals surveyed.

7. Attention is called to the undeveloped bar connecting Muertos and Berberia Islands and the shoal area one and one-half miles south of Berberia Island -- both shown on H. 2420 and H. 2746. These areas are outside the limits of those called for in the specific instructions.

8. The character and scope of the surveying are excellent.

9. Reviewed by E. P. Ellis, October, 1928.

Approved:

A. L. Gracomini

Chief, Section of Field Records (Charts)

Frank T. Bodin

Chief, Section of Field Work (H. & T.)

POST-OFFICE ADDRESS: U.S.C.&G.S.S. RANGER, Box 384, Norfolk, Va.

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

NOV 21 11 18 AM 28

14 BB

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

Steamer RANGER

November 20,1928.

To: Director, U.S.Coast and Geodetic Survey, Washington, D.C.

Through: Commanding Officer, Str.RANGER.

From: Benjamin H. Rigg, Jr. H. & G. Engineer.

Subject: Incomplete field record.

Reference: Your letter 10-McC dated November 15,1928.

The three (3) fathom sounding spoken of in paragraph 2,is a second sounding taken on the same spot, position 56 d. The fix should have been separated in the record. Often times a coral head of small area will grow on shoal spots in trppical waters. The water in this locality was not clear and considerable feeling around had to be done before the least depth was found. In this case a final try evidently netted a two foot difference and the recorder neglected to add a foot note.

Benjamin H. Rigg
Jr. H. & G. E.

Forwarded:

Ray L. Schoppe
Commanding Officer,
Str.RANGER.

Sec. 7 R.

Suggest that 19½ foot sounding be replaced by sounding of 17½ feet

BB

17½ plotted

EOE

10-MoC

November 15, 1928.

To: Lieutenant (j.g.) B. F. Rigg,
U. S. C. & G. S. S. RANGER,
Box 384,
Norfolk, Virginia.

Through: Commanding Officer, Ship RANGER.

From: The Director,
U. S. Coast and Geodetic Survey.

Subject: Incomplete field records.

There is forwarded herewith photostatic copy of page 62 of a sounding record of work done by you in the south coast of Porto Rico and a photostatic copy of the smooth sheet pertaining to this record.

Between positions Nos. 56 and 57 a sounding of three fathoms is shown. Both of these positions are detached and were taken almost an hour apart. The three fathom sounding is a critical sounding but there is no information in the records as to its position relative to either number 56 or 57.

Please furnish as soon as possible the information necessary to fix the position of the sounding.

Inclosure

Director.

Form 537

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4699

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 9

REGISTER NO. 4699

State Porto Rico

General locality S. Coast

Locality Vic. Santa Isabela and Berberia I.

Scale 1:20,000 Date of survey April-May, 19 27

Vessel Steamer RANGER

Chief of Party G.C.Mattison

Surveyed by B.H.Rigg

Protracted by C.F.Ehlers

Soundings penciled by B.H.Rigg

Soundings in ~~Fathoms~~ feet

Plane of reference M.T.L. -0.5 ft.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated July 3,1926 Feb.28,1927, 19

Remarks:

U. S. GOVERNMENT PRINTING OFFICE

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4699

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet	2026
Number of positions checked	630
Number of positions revised	46
Number of soundings recorded	9472
Number of soundings revised	467+
Number of signals erroneously plotted or transferred	2

Date: Oct. 25, 1928

Cartographer: J.T. Walker

DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

E. LESTER JONES, DIRECTOR

P O R T O R I C O

A DESCRIPTIVE REPORT TO

ACCOMPANY

H Y D R O G R A P H I C S H E E T N O. 9

-1927-

STEAMER RANGER

G.C.MATTISON,
Chief of Party.